

I CLAIM:

1. A surgical ligation clip for ligating a vessel, comprising:

a continuous length of material, said material having an elongated member having a proximal end and an opposite distal end and a length therebetween, said material having an elongated arm having a proximal end and an opposite distal end and a length therebetween, said arm having a vessel contacting surface oriented toward said member, said member having a surface oriented toward said vessel contacting surface of said arm, said arm and said member being biased toward one another, said clip having a proximal end, an opposite distal end and a length therebetween, said clip having a width proximate said distal end of said clip that is greater than a width proximate said proximal end of said clip, said surface of said member along at least a portion of the length of said member having a width corresponding to the width proximate said distal end of said clip.
2. The clip of claim 1, wherein said surface of at least one of said clamping arm and said support member is treated to enhance gripping of the fluid carrying structure.
3. The clip of claim 2, wherein said surface includes at least one of ridges, notches, burrs, and etching.
4. The clip of claim 1, further comprising a coil to bias said clamping arm and said support member toward one another.

5. The clip of claim 1, wherein said continuous length of material of at least one of said support member and clamping arm has a non-circular cross section along at least a portion of its length.
6. The clip of claim 1, in combination with a clip applier for applying the clip to a fluid carrying structure.
7. A surgical ligation clip for ligating a fluid carrying structure, said clip comprising:
 - a longitudinal axis, a distal end, and a proximal end opposite said distal end;
 - a clamping arm oriented generally along the longitudinal axis of said clip;
 - a support member oriented generally along the longitudinal axis of said clip; and
 - a connector at said proximal end of said clip, said connector joining said support member and said clamping arm, said clip being formed of a continuous length of material having a first free end terminating at said connector and a second free end terminating proximate said distal end of said clip.
8. The clip of claim 7, wherein said connector is adapted to bias said support member and said clamping arm toward one another in a closed position.
9. The clip of claim 7, wherein said connector includes a coil.
10. The clip of claim 7, wherein a surface of at least one of said clamping arm and said support member is treated to enhance gripping of the fluid carrying structure.
11. The clip of claim 10, wherein said surface includes at least one of ridges, notches, burrs, and etching.

12. The clip of claim 7, wherein said continuous length of material of at least one of said support member and clamping arm has a non-circular cross section along at least a portion of its length.
13. The clip of claim 7, in combination with a clip applier for applying the clip to a fluid carrying structure.
14. A surgical ligation clip for ligating a fluid carrying structure, comprising:
 - a continuous length of material forming a support member and a clamping arm, said clamping arm and said support member being biased toward one another to ligate the fluid carrying structure therebetween, at least one of said support member and clamping arm being convex relative to the other of said support member and clamping arm along a plane perpendicular to the axis of rotation between said support member and said clamping arm when the clip is in a closed position around the fluid carrying structure.
15. The clip of claim 14, wherein said clamping arm is convex relative to said support member when the clip is in a closed position around the fluid carrying structure.
16. The clip of claim 15, wherein said clamping arm has a radius of curvature of approximately 25 mm.
17. The clip of claim 14, further comprising a coil to bias said clamping arm and said support member toward one another.
18. The clip of claim 14, wherein a surface of at least one of said clamping arm and said support member is treated to enhance gripping of the fluid carrying structure.

19. The clip of claim 18, wherein said surface includes at least one of ridges, notches, burrs, and etching.
20. The clip of claim 14, wherein said continuous length of material of at least one of said support member and clamping arm has a non-circular cross section along at least a portion of its length.
21. The clip of claim 14, in combination with a clip applier for applying the clip to a fluid carrying structure.
22. A surgical ligation clip for ligating a fluid carrying structure, comprising:
 - a support member having a proximal end, a distal end and a horizontal plane;
 - a clamping arm having a proximal end and a distal end, said distal end of said clamping arm being moveable above and below the horizontal plane of said support member; and
 - a connector for connecting said proximal end of said clamping arm to said proximal end of said support member, said connector being adapted to bias said distal end of said clamping arm away from said distal end of said support member while the clip is in a closed and unengaged position.
23. The clip of claim 22, wherein a surface of at least one of said clamping arm and said support member is treated to enhance gripping of the fluid carrying structure.
24. The clip of claim 23, wherein said surface includes at least one of ridges, notches, burrs, and etching.
25. The clip of claim 22, wherein said connector includes a coil.

26. The clip of claim 22, wherein at least one of said support member and clamping arm has a non-circular cross section along at least a portion of its length.
27. The clip of claim 22, in combination with a clip applier adapted to move said clamping arm above the horizontal plane of said support member to place said clip in an open position to receive the fluid carrying structure.
28. A surgical ligation clip for ligating a fluid carrying structure, comprising:
- a clamping arm having a proximal end and a distal end;
 - a support member moveable relative to said clamping arm, said support member having a proximal end and a distal end, said distal end of said support member having a concave curvature oriented towards said clamping arm and being adapted to receive said clamping arm when the clip is in a closed position; and
 - a connector for connecting said proximal end of said clamping arm to said proximal end of said support member, said connector being adapted to bias said clamping arm towards said support member in the closed position.
29. The clip of claim 28, wherein said connector includes a coil.
30. The clip of claim 28, wherein said clamping arm is curved along a plane perpendicular to the axis of rotation between said support member and said clamping arm.
31. The clip of claim 28, wherein said clamping arm is convex relative to said support member along a plane perpendicular to the axis of rotation between said support member and said clamping arm.

32. The clip of claim 28, wherein a surface of at least one of said clamping arm and said support member is treated to enhance gripping of the fluid carrying structure.
33. The clip of claim 32, wherein said surface includes at least one of ridges, notches, burrs, and etching.
34. The clip of claim 28, wherein at least one of said support member and clamping arm has a non-circular cross section along at least a portion of its length.
35. The clip of claim 28, in combination with a clip applier for applying the clip to a fluid carrying structure.
36. A method of ligating a fluid carrying structure having a diameter greater than 5 mm within a body of a patient, the method comprising the steps of:
 - placing a trocar having a diameter of 5 mm or less through external tissue of the patient;
 - inserting a ligation clip through the trocar, the ligation clip being resiliently biased to a closed position;
 - placing the ligation clip in an open position around at least a portion of the fluid carrying structure having a diameter greater than 5 mm; and
 - releasing the ligation clip to permit the ligation clip to move to the closed position.
37. The method of claim 36, further comprising the step of compressing the fluid carrying structure prior to the step of placing the ligation clip.
38. The method of claim 37, wherein the step of compressing includes limiting the amount of compression to no less than approximately 1.5 mm.

39. A surgical ligation clip for ligating a fluid carrying structure, said clip comprising:
- a longitudinal axis, a distal end, and a proximal end opposite said distal end;
 - a support member oriented generally along the longitudinal axis of said clip;
 - a clamping arm oriented generally along the longitudinal axis of said clip, said clamping arm being biased toward said support member, said clip being formed of a continuous length of material having a first free end terminating proximate said proximal end of said clip and a second free end terminating proximate said distal end of said clip.
40. The clip of claim 39, wherein said clip includes a first bend section between said support member and said clamping arm.
41. The clip of claim 41, wherein said support member includes a second bend section.